

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of:)	
)	
Amendment of Part 90 of the Commission's)	WP Docket No. 07-100
Rules)	
)	

**REPLY COMMENTS OF
THE NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL**

The National Public Safety Telecommunications Council (NPSTC) submits these reply comments in response to the Sixth Further Notice of Proposed Rulemaking (Sixth FNPRM) in the above captioned proceeding.¹ The Sixth FNPRM seeks comment on alternatives to stimulate expanded use of and investment in the 4.9 GHz band. NPSTC previously submitted comments in this proceeding, seeking to set the record straight with a more accurate picture of current and potential usage in the 4.9 GHz band. NPSTC also addressed the numerous policy and technical issues raised in the Sixth FNPRM.

In these reply comments, NPSTC addresses the lack of any interest in the band by commercial carriers in the initial round of comments. NPSTC also provides additional insight on sharing of the band and other issues as addressed by some commenters.

¹ *Sixth Further Notice of Proposed Rulemaking*, WP Docket No. 07-100, released March 23, 2018.

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The National Public Safety Telecommunications Council

The National Public Safety Telecommunications Council is a federation of public safety organizations whose mission is to improve public safety communications and interoperability through collaborative leadership. NPSTC pursues the role of resource and advocate for public safety organizations in the United States on matters relating to public safety telecommunications. NPSTC has promoted implementation of the Public Safety Wireless Advisory Committee (PSWAC) and the 700 MHz Public Safety National Coordination Committee (NCC) recommendations. NPSTC explores technologies and public policy involving public safety telecommunications, analyzes the ramifications of particular issues and submits comments to governmental bodies with the objective of furthering public safety telecommunications worldwide. NPSTC serves as a standing forum for the exchange of ideas and information for effective public safety telecommunications.

The following 16 organizations serve on NPSTC's Governing Board:²

- American Association of State Highway and Transportation Officials
- American Radio Relay League
- Association of Fish and Wildlife Agencies
- Association of Public-Safety Communications Officials-International
- Forestry Conservation Communications Association
- International Association of Chiefs of Police
- International Association of Emergency Managers
- International Association of Fire Chiefs
- International Municipal Signal Association
- National Association of State Chief Information Officers
- National Association of State Emergency Medical Services Officials
- National Association of State Foresters
- National Association of State Technology Directors
- National Council of Statewide Interoperability Coordinators
- National Emergency Number Association
- National Sheriffs' Association

² These comments represent the views of the NPSTC Governing Board member organizations.

Several federal agencies are liaison members of NPSTC. These include the Department of Homeland Security (the Federal Emergency Management Agency, the Office of Emergency Communications, the Office for Interoperability and Compatibility, and the SAFECOM Program); Department of Commerce (National Telecommunications and Information Administration); Department of the Interior; and the Department of Justice (National Institute of Justice, Communications Technology Program). Also, Public Safety Europe is a liaison member. NPSTC has relationships with associate members: The Canadian Interoperability Technology Interest Group (CITIG) and the Utilities Technology Council (UTC), and affiliate members: The Alliance for Telecommunications Industry Solutions (ATIS), Open Mobile Alliance (OMA), Telecommunications Industry Association (TIA), TETRA Critical Communications Association (TCCA), and Project 25 Technology Interest Group (PTIG).

NPSTC Reply Comments

I. The Record Does Not Support Re-designating the Band for Commercial Use

The Sixth Further NPRM (FNPRM) noted the Commission's belief that the 4.9 GHz band is underutilized and provided a statistic claiming that only 3.5% of the public safety entities eligible under the rules are licensed in the band. The FNPRM requested comment on re-designating the 4.9 GHz band in whole or in part for commercial use.³ Some at the Commission expressed interest in potentially re-designating the spectrum for commercial use even prior to receiving any comments in this proceeding.⁴

³ Sixth FNPRM at paragraph 85-86.

⁴ See Statements of Commissioner Michael O'Rielly and Commissioner Brendan Carr.

The record in this proceeding does not support auctioning the 4.9 GHz spectrum, in whole or in part, for commercial use. The NPSTC first round comments addressed how the Commission's 3.5% calculation has painted an inaccurate picture on public safety usage in the band and provided multiple forms of evidence to help set the record straight on public safety usage.

Comments from other public safety entities also support maintaining the band for public safety, rather than auctioning it for commercial use.⁵ Even the few comments of parties outside of public safety that advocate opening the band beyond today's eligibility either specifically oppose re-designating the band for commercial operations or talk in terms of some means of sharing the spectrum. For example, the comments of the Enterprise Wireless Alliance (EWA), the joint comments of the Utilities Technology Council (UTC)/Edison Electric Institute/National Rural Electric Cooperative Association/Gridwise Alliance and comments of Southern Company Services all specifically oppose re-designating and auctioning the spectrum for commercial carriers. GeoLinks, an internet service provider, supports broadening the eligibility of the band and recommends commercial entities be secondary to public safety. While GeoLinks does not specifically oppose auctioning the band, NPSTC notes that the GeoLinks description of sharing is unlikely to be compatible with auctioning the band for commercial use.

Neither AT&T, Verizon, T-Mobile nor Sprint filed first round comments in this proceeding. None of these carriers are shy about making their interest in various bands of spectrum publicly known in Commission proceedings. Therefore, the lack of first round comments by these entities serves as a signal that there is no significant interest in the 4.9 GHz band for licensed commercial carrier operations.

⁵ For example, see comments of APCO International, AASHTO, BayRics, Chattanooga, Flathead County, Montana and others.

In summary, there is significant support in the record NOT to auction the 4.9 GHz band for commercial use and essentially no support to auction the band. The only potential interest in auctioning the band for commercial use appears to be within the Commission, not in the market.

II. Opening the 4.9 GHz Band to Unlicensed Operation is Not in the Public Interest

Interest in the band for unlicensed use as expressed in first round comments is also practically non-existent. The numerous high tech companies that have joined together to promote unlicensed WiFi use so vigorously in other bands of spectrum did not even submit comments in this 4.9 GHz proceeding. Furthermore, the WiFi Alliance, whose members include many of these same companies, recently submitted an ex parte statement in the record that says:

The limited bandwidth and in-band and adjacent band incumbent operations at 4.9 GHz appear to preclude the suitability of this band as a candidate for Wi-Fi operations.⁶

The WiFi Alliance also submitted first round comments in this proceeding that provides further insight on its rationale for that conclusion:

In general, the 4.9 GHz band offers attributes that make it a good candidate for unlicensed use. For example, it is near the existing 5 GHz U-NII band which means equipment can be extended easily from existing 5 GHz into 4.9 GHz. The band's propagation characteristics are similar to 5 GHz, so that 4.9 GHz equipment could be seamlessly deployed as part of existing or new 5 GHz deployments without extensive engineering cost. **However, as noted above, next generation Wi-Fi networks are designed to support broadband connectivity by implementing 80 or 160 megahertz channels. Thus, the 50 megahertz of spectrum in the 4.9 GHz band on its own may not effectively address Wi-Fi spectrum needs.**⁷ [Footnotes deleted and emphasis added]

In addition, opening the band for unlicensed operations of the type deployed in the 5 GHz UNII bands has the potential to cause interference to public safety. NPSTC notes that despite

⁶ *Ex Parte* Notification submitted by the WiFi Alliance, July 12, 2018.

⁷ Comments of the WiFi Alliance at page 3 and 4.

Commission rules establishing the unlicensed ‘UNII’ operations at 5 GHz as secondary to licensed uses, and UNII band rules that require a “listen before talk” protocol, experience has shown that interference does still occur.

The Commission’s own website includes a section titled “U-NII and TDWR Interference Enforcement.” This section sets forth a list of almost 50 enforcement cases between January, 2007 and November 2017 in which UNII devices have presented an interference conflict with Terminal Doppler Weather Radar (TDWR) systems operated by the Federal Aviation Administration (FAA), US Armed Forces and TV broadcast stations.⁸ The problem was significant enough to warrant Commission issuance of an Enforcement Advisory on September 27, 2012 to remind manufacturers, marketers and users of UNII devices of the applicable rules.⁹ Still, 23 enforcement cases are listed with dates subsequent to issuance of that advisory public notice. This shows that despite the best efforts of the Commission and industry, interference can result from spectrum sharing, especially between dissimilar types of operations.

In addition, Globalstar recently submitted a petition for a notice of inquiry to address a 2 dB rise in the noise floor that it has measured in the 5 GHz band spectrum used for satellite uplinks that is shared with unlicensed UNII operations.¹⁰ Although the exact determination needs to be addressed further, Globalstar included an engineering analysis pointing to unlicensed operation in the 5 GHz band as a likely cause of the 2 dB rise in noise floor. These measurements show that spectrum sharing by unlicensed operations is not always “free” from potential impact to primary licensees.

⁸ <https://www.fcc.gov/general/u-nii-and-tdwr-interference-enforcement>

⁹ Public Notice, DA 12-459, FCC Enforcement Advisory No. 2012-07, issued September 27, 2012.
<https://docs.fcc.gov/public/attachments/DA-12-459A1.pdf>

¹⁰ See Globalstar Petition for Notice of Inquiry, RM-11808, submitted May 21, 2018 and associated Commission Public Notice, *Consumer Governmental Affairs Bureau Reference Information Center Petition for Notice of Inquiry* Report No. 3092, released June 6, 2018.

In summary, there appears to be no compelling public interest benefit to open the band for unlicensed operations on a shared basis. Also, doing so could subject licensed public safety operations in the band to interference, as evidenced by the Commission's and industry's experience at 5 GHz with conflicts between unlicensed UNII and primary authorized TDWR systems, and the recent Globalstar petition.

III. Dynamic Spectrum Sharing Poses Many Unanswered Questions

The comments of Federated Wireless, Inc. (Federated) propose that the Commission establish dynamic spectrum sharing in the 4.9 GHz band and provide public safety incumbents priority use protection. Federated recommends a three tier approach in which public safety would have tier 1 priority, CII would have tier 2 priority and anyone else would be eligible to use the band with a tier 3 priority. According to Federated, its recommended approach would eliminate the need for current frequency coordinators. Federated would be the beneficiary of such rules as it, and possibly other similar companies, would potentially serve as the administrator of dynamic spectrum sharing for a fee.

In its first round comments, NPSTC addressed three major concerns with the application of dynamic spectrum sharing at 4.9 GHz, similar to that being developed for the 3.5 GHz band. These major concerns included 1) the fact that the system for 3.5 GHz is still being developed and appears to be experimental from a public safety perspective; 2) that even if incumbent users have existing operations protected, it is not at all clear they would still have the same rights and opportunities to expand their operations going forward; and 3) the lack of clarity on how a dynamic spectrum sharing system in public safety spectrum would be funded.

In its comments, Federated claims that dynamic sharing is not experimental and cites its approach of a Spectrum Access System (SAS) and Environmental Sensing Capability (ESC) being tested in the 3.5 GHz band. In that band, Federated proposed and the Commission has chosen to deploy dynamic spectrum sharing using an SAS and an ESC. The priority facilities Federated must protect in that band are primarily U.S. Navy shipboard radars and ground-based radar sites at listed military installations. In its comments, Federated states:

Surely, if DoD is comfortable relying on dynamic sharing techniques to allow safe and reliable sharing of national security-critical spectrum resources and the federal government is looking for additional sharing opportunities, the greater public safety community can have confidence that dynamic spectrum sharing will also work for it.¹¹

The National Telecommunications and Information Administration (NTIA) provided the derivation and definitions of exclusions zones along the U.S. coastline that Federated must initially avoid to protect shipboard radars¹² The exclusion zones are based on NTIA technical calculations considering parameters of the systems to be protected specific to the 3.5 GHz band, as detailed in the extensive NTIA report. Appendix A of these reply comments includes an excerpt from the NTIA report that shows a map of the resulting exclusion zones based on these calculations. As shown, the exclusion zones at 3.5 GHz are mostly confined to run along the edges of the U.S. coastlines. The NTIA report also lists 27 ground-based radar sites at military installations that must be protected.¹³ Given the very small number of ground-based radar sites at 3.5 GHz, compared to the thousands of sites at 4.9 GHz, the remaining discussion of dynamic spectrum sharing protection at 3.5 GHz will focus primarily on shipboard radars.

¹¹ Comments of Federated Wireless at page 5.

¹² NTIA Report 15-517, 3.5 GHz Exclusion Zone Analyses and Methodology, June 2015, Reissued March 2016 with some corrections and clarifications.

¹³ See Table C-1 of the NTIA report.

At 3.5 GHz, the Commission adopted rules under which the protection mechanism uses a phased approach. The Commission's Report and Order authorizing implementation of dynamic spectrum sharing and implementation of the Citizens Broadband Radio Service (CBRS) in the 3.5 GHz band explained this approach as follows:

...we adopt the phased approach to federal Incumbent User protection generally described in NTIA's letter. We believe this approach properly balances the need to protect current and future federal operations in the band with the need to make the band available for commercial use in the near future. During phase one, a large portion of the country will be available for Citizens Broadband Radio Service use as soon as a commercial SAS is approved and made commercially available. During phase two, much of the rest of the country – including major coastal cities – will be made available for commercial use when no federal incumbent use is detected in a given area by the ESC.

During the first phase, no Citizens Broadband Radio Service operations will be permitted in the 3550-3650 MHz band within the Exclusion Zones. Outside of the Exclusion Zones, Citizens Broadband Radio Service Licensees will be permitted to deploy and utilize Category A CBSDs in the 3550-3650 MHz band, consistent with the Commission's rules. Phase one deployments may begin once an SAS is approved and made available for commercial use as set forth in section III(H)(3)(b).

Phase two will begin when an ESC is developed, approved, and deployed as described in section III(I). The ESC will consist of a network of sensors – infrastructure-based, device-based, or a combination of both – that will detect federal radars operating in and around the 3.5 GHz Band and relay information regarding those transmissions to the SAS in order to protect incumbent federal users. Sensors must be deployed in or near Exclusion Zones and near federal ground-radar facilities to detect federal spectrum use. Approved SASs will process the information communicated by the ESC and instruct associated CBSDs to cease operations or move to unencumbered frequencies in geographic areas where federal use has been detected. The ESC will be managed and operated by one or more commercial entities and will not require day-to-day input or oversight from DoD or NTIA.¹⁴

It is clear from this description that the ability of an SAS to have full information and of an ESC to detect transmissions reliably from all protected facilities during phase two is extremely important.

NPSTC believes any system of dynamic spectrum sharing must be designed based on the specifics of the relevant spectrum environment, including the systems to be protected. As addressed

¹⁴ *Report and Order and Second Further Notice of Proposed Rulemaking*, GN Docket No. 12-354, released April 21, 2015, at paragraphs 258 and 260-261.

more fully below, the environment at 4.9 GHz is very different from that at 3.5 GHz in overall scope, terrain and the frequency of adding new primary or expanded operations that must be protected. Therefore, DOD's comfort level with dynamic spectrum sharing in an environment at 3.5 GHz characterized by a more confined area, and a comparatively few and relatively stable number of shipboard radars, has no real bearing on whether or not public safety or the Commission should endorse dynamic spectrum sharing for 4.9 GHz.

NPSTC downloaded the 4.9 GHz license information for fixed sites in the Commission's ULS database, and then mapped the fixed site coordinate points. The resultant map is shown in Appendix B of these comments. This map does NOT include any temporary fixed sites or base/mobile operations authorized under 4.9 GHz geographic licenses, as specific site information is not available in the ULS for facilities deployed under geographic licenses. NPSTC previously recommended, and the Commission has proposed, that the holders of geographic licensees provide additional information to be added to the Commission's ULS database, which would occur over a period of time following a Commission decision in this proceeding.

The map shows that the public safety facilities which would have top priority protection under a Federated dynamic spectrum sharing proposal creates a significantly larger scope of facilities to be protected and much greater geography involved than that currently faced at 3.5 GHz. As noted above, this map does not even show all the public safety facilities that would be protected, as it does not include temporary fixed sites and base/mobile operations authorized on a blanket basis under geographic licenses. Even with the limitation of including only the fixed sites known at this time, the sheer number of 4.9 GHz sites to be protected far outnumbers the navy radar facilities at 3.5 GHz. Once the sites of facilities deployed under geographic licenses are also known and added to the equation, the map will be even more crowded.

A recent article in Defense News indicated that the U.S. Navy currently has 280 ships today as of February 2018, with plans to expand to 326 ships by 2023.¹⁵ That represents only about 7% to 8% of the 3918 fixed sites at 4.9 GHz as shown in the NPSTC first round comments. The 4.9 GHz facilities also are spread throughout the country, as compared to 3.5 GHz protected shipboard radar facilities that dock along the U.S. coastline. An ESC system to monitor 4.9 GHz facilities properly and an SAS database would need to be much larger in scope at 4.9 GHz as it would not have the benefit of being confined primarily to protected facilities along the coastline, as is the case at 3.5 GHz.

Being near the coast, an ESC which monitors off-air for the presence of protected signals in the 3.5 GHz band, also should enjoy the benefit of mostly a clear line-of-sight path between monitoring receivers and shipboard radar signals. This is not the case for the 4.9 GHz band, as an ESC system of monitoring would need to cover most of the geography of the U.S. and be designed for multiple terrain environments, possible building obstacles and potential foliage to detect current and future public safety use properly. Going forward, a properly designed ESC also would need to detect fixed operations, any temporary fixed or mobile operations, robotics, airborne operations and emerging public safety IoT devices/personal area networks as addressed in the first round NPSTC comments.

A further distinction between the environments at 3.5 GHz and 4.9 GHz is the frequency with which new or expanded protected operations would be added to the respective bands. The first round NPSTC comments advised that fixed sites had grown by 31%, i.e., by an additional 935 sites, in less than three years and that an undetermined number of facilities under geographic licenses may have grown as well. That all compares to 46 new U.S. Navy ships planned over the next 5 years. In other

¹⁵ <https://www.defensenews.com/smr/federal-budget/2018/02/13/us-navy-to-add-46-ships-in-five-years-but-355-ships-is-well-over-the-horizon/>

words, the growth in fixed sites in under three years is over 20 times that of the planned growth in shipboard radars over the next 5 years.

For the foregoing reasons, a dynamic spectrum sharing system for 4.9 GHz would need to be much more extensive in scope and rigorous in design than that currently being tested for the 3.5 GHz band. Therefore, even if one assumes that the SAS/ESC system is substantially complete with respect to protecting Federal shipboard radars at 3.5 GHz, it is still clearly way premature within the context of being able to protect public safety operations at 4.9 GHz.

NPSTC previously noted it is important that any system of dynamic spectrum sharing protect new and expanded public safety systems as needed to serve operational requirements, in addition to existing systems. Fortunately, research on the Commission's 3.5 GHz decision shows that it is sensitive to the need to accommodate expansions in incumbent use. With respect to Federal systems at 3.5 GHz, the Commission stated:

DoD may also add additional radar sites in the future through the usual NTIA spectrum assignment processes, and the Commission will provide appropriate notice of any such additions and make the necessary ministerial amendments to its Table of Allocations. Once assigned, these new sites will be accorded the same protections as other radar sites in the band.¹⁶ (footnotes omitted)

Nevertheless, NPSTC is concerned that Federated Wireless, and possibly the Commission, may not fully appreciate the differences in potentially adding 40 new ships with radar over 5 years in the 3.5 GHz band, compared to the expected continuation of frequently licensing new and expanded public safety 4.9 GHz facilities. Regardless, if the Commission chooses to implement dynamic spectrum sharing at 4.9 GHz, the public safety community would need full provisions to continue licensing new facilities, as well as the continued ability to obtain all types of license modifications for existing facilities, as needed to support operations.

¹⁶ *Report and Order and Second Further Notice of Proposed Rulemaking* at Paragraph 262.

In its comments, NPSTC addressed that it is not clear how an SAS-type system would be funded in public safety spectrum and noted that it has heard estimates that an SAS can cost approximately \$20 million to establish and implement. Federated Wireless stated in its comments:

As such a system has already been designed and is being deployed in the CBRS band, a similar system could be easily deployed and operational in the 4.9 GHz band in a short timeframe. With respect to cost, Federated Wireless believes that a reasonable cost structure can be designed whereby operating expenses could be covered by user fees charged to the Tier 2 and Tier 3 users.¹⁷

It is certainly not clear that an SAS/ESC system designed to protect a relatively limited number of shipboard radars confined to the coastlines would be capable of reliably protecting current and future public safety 4.9 GHz facilities located throughout the country without some major modifications and at minimum, numerous ESC monitoring site additions. Also, examination of the map in Appendix B shows there are significant areas in the country with numerous 4.9 GHz sites. Given the need to protect both current and future public safety use of the 4.9 GHz band, the spectrum that could be made available to lower tier users is likely to be significantly limited in some major areas of the country. Accordingly, NPSTC seriously questions the Federated conclusions regarding the viability of a cost structure to support dynamic spectrum sharing with the facilities necessary to protect public safety operations on a reliable basis.

In view of all the above, NPSTC believes a mechanism for public safety to share the 4.9 GHz band with CII and with coordination conducted by established public safety coordinators provides the best approach at 4.9 GHz.¹⁸ An additional benefit of current frequency coordinators is the availability for applicants and licensees to reach knowledgeable personnel, rather than merely relying on some computer, to address issues that arise. That is certainly preferable to the situation many consumers currently face

¹⁷ Comments of Federated Wireless at page 16.

¹⁸ The joint comments of UTC, EEI, NRECA and GridWise also support requiring frequency coordination by public safety coordinators to protect against interference going forward. See joint comments at page 27.

with some companies in the healthcare, mortgage and other industries where a party with an issue that does not fit some predefined computerized process must wait on the phone extended periods of time just to reach a live person that may or may not even have the knowledge to resolve the problem. Public safety spectrum coordination should not devolve to that lower level of service as a result of implementing dynamic spectrum sharing.

In the event the Commission decides to implement dynamic spectrum sharing at 4.9 GHz, against NPSTC recommendations, it will be important that public safety and related industry engineering experts be fully included in developing requirements for an SAS and ESC system. These reply comments have addressed only some of the high level distinctions between the environment at 4.9 GHz and that at 3.5 GHz which must be taken into account. NPSTC believes that the process of developing the rigorous requirements for an SAS and ESC capable of reliably protecting current and future public safety operations at 4.9 GHz would reveal many other distinctions and factors that must be taken into account.

IV. Developing a More Rigorous Database of 4.9 GHz Information

Six years ago when the Fifth Further Notice of Proposed Rulemaking in this Proceeding was released, NPSTC advised the Commission that steps were needed to gather additional information on systems deployed under 4.9 GHz geographic licenses. As recognized by the Commission in its Sixth FNPRM, based on the earlier input of NPSTC and others, a key challenge with the current geographic licensing approach is that it is impossible to tell what is actually deployed by examining the information in the ULS. Accordingly, NPSTC continues to support requiring existing licensees to provide more specific information about their operations that the Commission would incorporate into the license information in the ULS. NPSTC

believes this proposed requirement is an essential first step, regardless of any other policy or technical decisions made in this proceeding.

Although NPSTC would encourage existing licensees to provide this information as expeditiously as possible, NPSTC indicated in its comments that it supports the Commission's proposal to allow up to one year to provide the information. The Enterprise Wireless Alliance (EWA) commented that the time period within which to provide this additional information should be much shorter, and recommended 60 days from the date that the FCC releases a public notice announcing the filing window.¹⁹

In concept, NPSTC would prefer to see the information submitted more expeditiously when it is possible to do so. However, discussion in the NPSTC 4.9 GHz working group deliberations raised the valid concern that a public safety entity with extensive 4.9 GHz deployments under the auspices of a geographic license may not already have full geographic or technical information at its fingertips and may need to determine that information for numerous facilities before the Commission-set deadline. Accordingly, the working group determined that some licensees, but not all, may need the year timeframe proposed by the Commission.

The comments in this proceeding raised a new issue that NPSTC believes could impact the time period incumbent licensees will want to have to submit additional technical information. In its comments, APCO, International recommended "... a temporary licensing freeze on the 4.9 GHz band during the one-year period in which incumbent licensees provide technical information." APCO went on to indicate that the temporary freeze "...will allow the

¹⁹ Enterprise Wireless Alliance comments at page 9 and 10.

Commission and frequency coordinators to work from accurate technical information for the consideration of new applications.”²⁰

Given the lack of frequency coordination currently required in the 4.9 GHz band, NPSTC understands why APCO believes a process to develop an accurate and more complete database is important. However, NPSTC’s experience is that license freezes almost always place some public safety entities in the unfortunate situation of having planned a new or upgraded system that cannot be licensed without the delay of a freeze. Therefore, NPSTC believes any such freeze must be held to the absolute minimum time necessary.

NPSTC believes the FCC is likely to need some time to make the ULS ready to receive the additional technical information and ensure the on-line template in which licensees must submit the information is available and compatible with the overall ULS database requirements. The industry’s experience over the years has been that even seemingly minimal changes to the ULS takes time. In addition, a Commission decision to require the technical information to be submitted is likely to need Office of Management and Budget approval under the Paperwork Reduction Act, which contrary to its name, adds paperwork and time to the equation. Preparing the ULS and the process of obtaining OMB approval with an effective date in place could easily span several months of time or longer.

Therefore, NPSTC recommends that any freeze not be started until required OMB approvals have been obtained and are effective, and the ULS is actually ready to receive the information. Even with the important goal of assembling accurate technical information from which coordinators can work, NPSTC sees absolutely no need to initiate a freeze prior to all the pieces being in place so the additional information can be filed and incorporated into the ULS.

²⁰ APCO, International comments at page 6.

If a freeze is enacted, NPSTC further recommends a “rolling conclusion date” for the freeze. If one static nationwide conclusion date is implemented for the freeze, licensees that take the steps to implement their required technical information expeditiously are still prevented by the freeze from applying for new or modified licenses. Therefore, there is no real incentive to file the information early. However, if the Commission were to conclude the freeze on a region-by-region basis once the information is submitted, licensees in a given region would have an incentive to meet the requirement early so the freeze in their respective region would be concluded and application filing could resume. There is certainly precedent for concluding freezes on a rolling basis by region, as that was done in connection with 800 MHz rebanding.

For 4.9 GHz, FCC could establish up to one year to submit the technical information. However, NPSTC believes its recommendations above will result in an incentive for licensees to provide the information much more quickly. In addition, the NPSTC recommendations regarding triggers for initiating and concluding any associated license freeze should benefit all licensees collectively by minimizing the length of a freeze during which public safety licenses would need to place their application plans on hold.

Conclusion

NPSTC appreciates the opportunity to provide further input in these reply comments to the Commission’s proposals in the 4.9 GHz Band Sixth Further Notice of Proposed Rulemaking. Based on the record, there appears to be no compelling public interest benefit either to auction the band for commercial use or to open the band for unlicensed operations. A review of the comments show no support for auctioning the 4.9 GHz spectrum for commercial use. Comments from public safety and professional user representatives oppose auctioning the band. Major carriers did not even submit first-round comments in this proceeding, signaling a lack of

interest in this spectrum for commercial carrier use. The record is similarly devoid of any substantial support for unlicensed operations in the band. The WiFi Alliance, whose members include many of the major technology companies seeking additional unlicensed spectrum in other bands, recently advised the Commission that the limited bandwidth and incumbent operations at 4.9 GHz preclude suitability of the band for WiFi operations.

In these reply comments, NPSTC also examines the potential for dynamic spectrum sharing at 4.9 GHz, similar to that being tested at 3.5 GHz. Based on its research and examination of the issue, NPSTC views dynamic spectrum sharing as experimental and not appropriate for public safety spectrum. NPSTC addresses differences in the spectrum environment at 4.9 GHz from that at 3.5 GHz and concludes that the dynamic sharing database and off-air monitoring tools would need to be much more extensive in scope and more complex in design at 4.9 GHz than the systems being tested at 3.5 GHz. Among other differences, facilities to be protected at 3.5 GHz are much more limited and stable in number than those at 4.9 GHz. The 4.9 GHz band also has the added complexity of multiple terrain environments, building blockages, etc. that are less prevalent for monitoring at 3.5 GHz along the U.S. coastline.

NPSTC also addresses the importance of gathering additional technical and site information from 4.9 GHz geographic licensees, and recommends an approach to encourage licensees to provide the information more quickly. Given the temporary license freeze APCO proposed, NPSTC recommends specific start/stop triggers to minimize the length of the freeze and provide licensees incentives to submit the additional information well in advance of the one year deadline the Commission proposed.

Ralph A. Haller, Chairman

A handwritten signature in dark ink, appearing to read "Ralph A. Haller", with a long, sweeping horizontal line extending to the right.

National Public Safety Telecommunications Council
8191 Southpark Lane, Suite 205
Littleton, Colorado 80120-4641
866-807-4755

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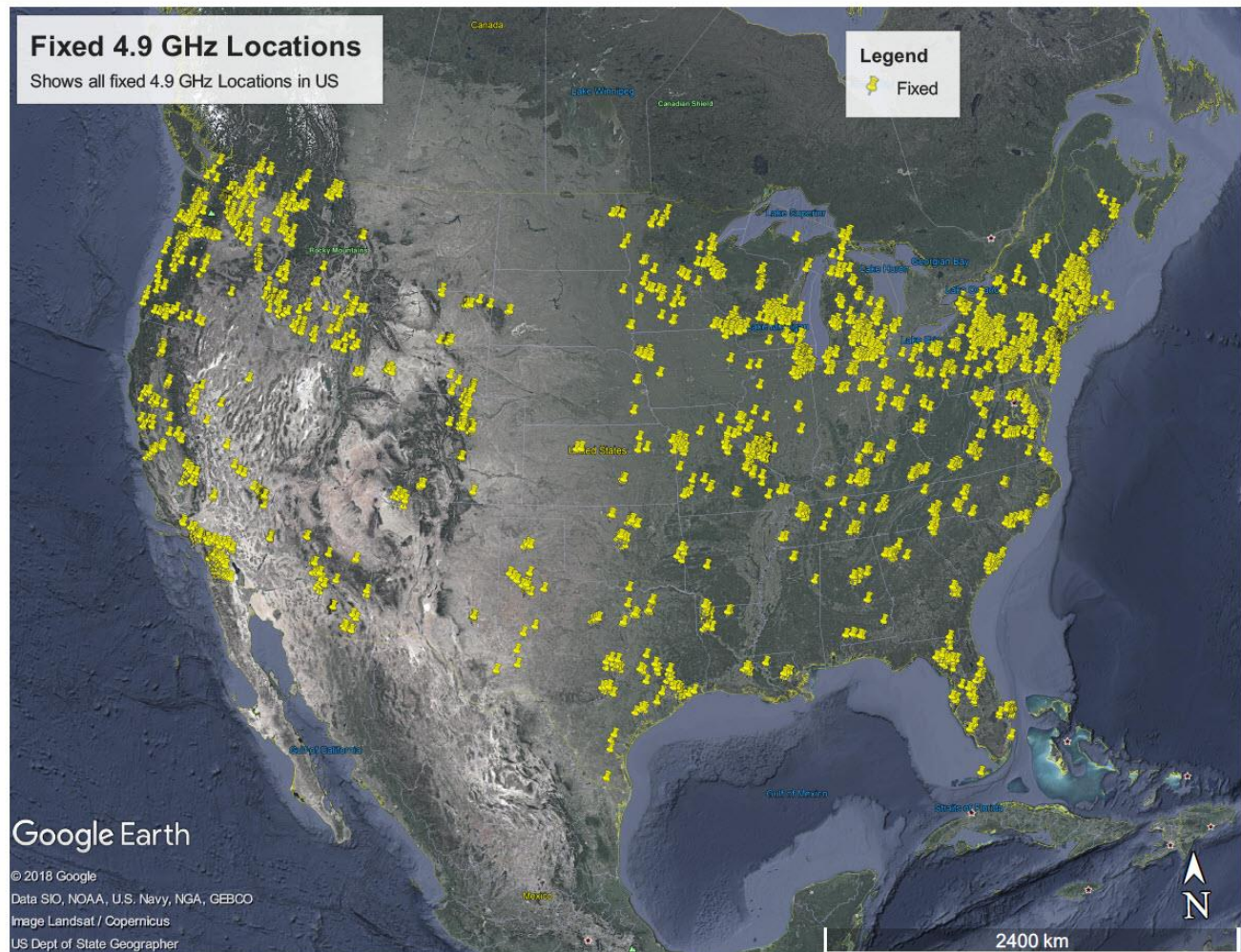
Appendix A: NTIA Exclusions Zones at 3.5 GHz



Map depicting 3.5 GHz exclusions zones -- Figure B-1 from NTIA Technical Report 15-517

Per NTIA: "...The yellow line on each plot is the exclusion zone distance based on the Fast Track Report and the blue line is the revised exclusion zone distance. The red and blue dots in the figures represent the ship location off-shore."

Appendix B: Map of 4.9 GHz Fixed Locations



Note: This map depicts fixed locations with site information currently included in the Commission's ULS database. Additional temporary fixed and base station locations not included in the map exist under geographic licenses for which site information currently is not contained in the ULS database.